

S

ENGINEERING CHANGE NOTICE

1. ECN 660518

Proj. ECN

2. ECN Category (mark one) <input type="checkbox"/> Supplemental <input checked="" type="checkbox"/> Direct Revision <input type="checkbox"/> Change ECN <input type="checkbox"/> Temporary <input type="checkbox"/> Standby <input type="checkbox"/> Supersedure <input type="checkbox"/> Cancel/Void	3. Originator's Name, Organization, MSIN, and Telephone No. T. Nuxall, CVDF, R3-86, 372-3739	4. USQ Required? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. Date 6/1/00	
	6. Project Title/No./Work Order No. SNF/W-441 Spent Nuclear Fuel Cold Vacuum Drying	7. Bldg./Sys./Fac. No. CVDF 142-K	8. Approval Designator S ^N Q	
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) SNF-3934, Rev. 1, SNF-3890, Rev. 1, SNF-3876, Rev. 1, SNF-3877, Rev. 1	10. Related ECN No(s). N/A	11. Related PO No. N/A	

12a. Modification Work <input type="checkbox"/> Yes (fill out Blk. 12b) <input checked="" type="checkbox"/> No (NA Blks. 12b, 12c, 12d)	12b. Work Package No. N/A	12c. Modification Work Complete N/A	12d. Restored to Original Condition (Temp. or Standby ECN only) N/A
Design Authority/Cog. Engineer Signature & Date		Design Authority/Cog. Engineer Signature & Date	

13a. Description of Change

13b. Design Baseline Document? Yes No

SC

Process Hood GOVs

Revised internal pressure acceptance criteria to "Withstands nominal 150 psig and 29" Hg Vacuum". Add GOV Seat Leakage acceptance criteria. Revised all GOV fail safe position, stroke time to "Less than 2 seconds", deleted critical characteristic insulation resistance, solenoid inrush current, solenoid holding current, and current carrying capability of contracts.

USQ Approval: *CVD-00-1036 OK 6/2/00*

14a. Justification (mark one)

Criteria Change <input type="checkbox"/>	Design Improvement <input checked="" type="checkbox"/>	Environmental <input type="checkbox"/>	Facility Deactivation <input type="checkbox"/>
As-Found <input type="checkbox"/>	Facilitate Const <input type="checkbox"/>	Const. Error/Omission <input type="checkbox"/>	Design Error/Omission <input type="checkbox"/>

14b. Justification Details

Revision required to make these CGI dedication packages consistent with there safety function.

The design verification method for SS/SC components is by independent review in accordance with EN-6-027-01. Documentation of this review is accomplished by the independent review approval signature provided on page 2 of this ECN.

15. Distribution (include name, MSIN, and no. of copies)
 See distribution sheet.

RELEASE STAMP

DATE: JUN 06 2000

STA: 30

HANFORD RELEASE

ID 18

ENGINEERING CHANGE NOTICE

16. Design Verification Required <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	17. Cost Impact NA <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; text-align: center;">ENGINEERING</td> <td style="width: 50%; text-align: center;">CONSTRUCTION</td> </tr> <tr> <td>Additional <input type="checkbox"/> \$</td> <td>Additional <input type="checkbox"/> \$</td> </tr> <tr> <td>Savings <input type="checkbox"/> \$</td> <td>Savings <input type="checkbox"/> \$</td> </tr> </table>	ENGINEERING	CONSTRUCTION	Additional <input type="checkbox"/> \$	Additional <input type="checkbox"/> \$	Savings <input type="checkbox"/> \$	Savings <input type="checkbox"/> \$	18. Schedule Impact (days) NA Improvement <input type="checkbox"/> Delay <input type="checkbox"/>
ENGINEERING	CONSTRUCTION							
Additional <input type="checkbox"/> \$	Additional <input type="checkbox"/> \$							
Savings <input type="checkbox"/> \$	Savings <input type="checkbox"/> \$							

19. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13. Enter the affected document number in Block 20.

SDD/DD	<input type="checkbox"/>	Seismic/Stress Analysis	<input type="checkbox"/>	Tank Calibration Manual	<input type="checkbox"/>
Functional Design Criteria	<input type="checkbox"/>	Stress/Design Report	<input type="checkbox"/>	Health Physics Procedure	<input type="checkbox"/>
Operating Specification	<input type="checkbox"/>	Interface Control Drawing	<input type="checkbox"/>	Spares Multiple Unit Listing	<input type="checkbox"/>
Criticality Specification	<input type="checkbox"/>	Calibration Procedure	<input type="checkbox"/>	Test Procedures/Specification	<input type="checkbox"/>
Conceptual Design Report	<input type="checkbox"/>	Installation Procedure	<input type="checkbox"/>	Component Index	<input type="checkbox"/>
Equipment Spec.	<input type="checkbox"/>	Maintenance Procedure	<input type="checkbox"/>	ASME Coded Item	<input type="checkbox"/>
Const. Spec.	<input type="checkbox"/>	Engineering Procedure	<input type="checkbox"/>	Human Factor Consideration	<input type="checkbox"/>
Procurement Spec.	<input type="checkbox"/>	Operating Instruction	<input type="checkbox"/>	Computer Software	<input type="checkbox"/>
Vendor Information	<input type="checkbox"/>	Operating Procedure	<input type="checkbox"/>	Electric Circuit Schedule	<input type="checkbox"/>
OM Manual	<input type="checkbox"/>	Operational Safety Requirement	<input type="checkbox"/>	ICRS Procedure	<input type="checkbox"/>
FSAR/SAR	<input type="checkbox"/>	IEFD Drawing	<input type="checkbox"/>	Process Control Manual/Plan	<input type="checkbox"/>
Safety Equipment List	<input type="checkbox"/>	Cell Arrangement Drawing	<input type="checkbox"/>	Process Flow Chart	<input type="checkbox"/>
Radiation Work Permit	<input type="checkbox"/>	Essential Material Specification	<input type="checkbox"/>	Purchase Requisition	<input type="checkbox"/>
Environmental Impact Statement	<input type="checkbox"/>	Fac. Proc. Samp. Schedule	<input type="checkbox"/>	Tickler File	<input type="checkbox"/>
Environmental Report	<input type="checkbox"/>	Inspection Plan	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Permit	<input type="checkbox"/>	Inventory Adjustment Request	<input type="checkbox"/>		<input type="checkbox"/>

20. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision
NA		

21. Approvals

Signature	Date	Signature	Date
Design Authority C. Miska	6/1/00	Design Agent	
Cog. Eng. C. VanKatwijk	6/2/00	PE	
Cog. Mgr. T. Choho	6/2/00	QA	
QA H. Chafin	6/2/00	Safety	
Safety J. Brehm	6/2/00	Design	
Independent Reviewer	6/2/00	Environ.	
Other: • C. Haller	6/2/00	Other	
* Approval authorized parallel preparation of USQ screen with implementation of ECN per NSDI-02.			
		<u>DEPARTMENT OF ENERGY</u>	
		Signature or a Control Number that tracks the Approval Signature	
		<u>ADDITIONAL</u>	

DISTRIBUTION SHEET

To Distribution	From SNF-CVD	Page 1 of 1
Project Title/Work Order W-441,		Date 6/2/00
		EDT No. N/A
		ECN No. 660518

Name	MSIN	Text With All Attach.	Text Only	Attach./Appendix Only	EDT/ECN Only
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Worcester Solenoid- Actuated Gas-Operated MCO Isolation Valves

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Project Hanford Management Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

Fluor Hanford

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Worcester Solenoid-Actuated Gas-Operated MCO Isolation Valves

C. Van Katwijk
Fluor Hanford, Inc.

Date Published
June 2000

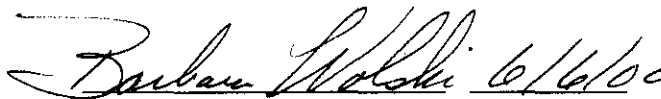
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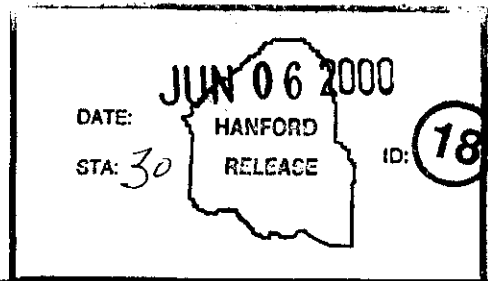
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Release Stamp

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RECORD OF REVISION

(1) Document Number

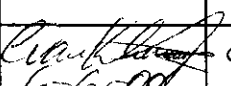

SNF-3876

Page 1

(2) Title

WORCESTER SOLENOID-ACTUATED GAS-OPERATED MCO ISOLATION VALVES

Change Control Record

(3) Revision	(4) Description of Change - Replace, Add, and Delete Pages	Authorized for Release		
		(5) Cog. Engr.	(6) Cog. Mgr.	Date
0	(7) EDT 626250, INITIAL RELEASE			
1	ECN 653776, REVISION TO MEET SEL REV. 6.			
2 RS	ECN 660518, REVISION TO MEET INTERNAL PRESSURE ACCEPTANCE CRITERIA.	 6-6-00		6-6-00

Commercial Grade Item Upgrade Dedication Form

SNF-3876, Rev. 2

ECN No. N/A CGI No. CGI-SNF-D-07-P4-001
 Title: **Worcester Solenoid-Actuated Gas-Operated MCO Isolation Valves**

Page 1 of 10

Section 1 Part Information			
Item No.: <u>N/A</u>	Manufacturer: <u>N/A</u>	Supplier: <u>N/A</u>	
Mfg. Part/Model No.: <u>N/A</u>	Supplier's P/N: <u>N/A</u>		
Part Description: <u>N/A</u>			
End Use Description: <u>N/A</u>			
Section 2a Component Information			
Equipment No.: <u>VPS- GOV/SOV-1*05, 1*09</u>	Specification No.: <u>SNF-5303, Rev. 0 (W-441-P4, Rev. 3)</u>	Manufacturer: <u>Worcester Controls</u>	Past P.O. No.: <u>N/A</u>
Procurement and/or Model Number: <u>1" E 5966RTBW4 With 15I939SWM212OPBC</u>	Equipment Supplier (if different from manufacturer): <u>Olympic Tool & Engineering</u>	Equip. Supplier's Part No.: <u>N/A</u>	
Component Description: These valves are 1" gas-operated full-port ball valves incorporating a solenoid and limit switches as integral parts of the actuator that are used in different process streams within the CVDF hood. The valves fail closed (on loss of pressure or electrical) for MCO isolation to either reduce air in leakage or loss of He. All valves have coupling for transverse actuator mounting.			
Section 2b Commercial Availability of the Item			
1. Is the Item available from a catalogue from a qualified NQA1 supplier or ISO 9000 supplier (coordinate with project CGI interface Engineer or BTR)? <input type="checkbox"/> YES (go to #2 below) <input checked="" type="checkbox"/> NO (go to procedure step 6.3.2, proceed to dedicate Item) If not available from a qualified NQA1 supplier, is it available from an ISO 9000 supplier? (coordinate w/ project CGI Interface Engineer or BTR): <input type="checkbox"/> YES (go to #2 below, procedure step 6.3.2, dedicate Item) <input checked="" type="checkbox"/> NO (procedure step 6.3.2, dedicate Item)			
2. List of Candidate qualified suppliers or ISO 9000 suppliers: <u>N/A</u>			
3. Recommended Procurement Strategy (coordinate with project CGI interface Engineer or BTR): <u>N/A</u>			
Section 2c CGI Determination			
CGI Determination Questions:			
#1: Is the Item subject to design or specification requirements that are unique to nuclear facilities or activities? <input type="checkbox"/> YES (the Item is not commercial grade) <input checked="" type="checkbox"/> NO (continue)			
#2: Is the Item used in applications other than nuclear facilities or activities? <input type="checkbox"/> NO (the item is not commercial grade) <input checked="" type="checkbox"/> YES (continue)			
#3: Is the Item ordered from manufacturer/supplier on the basis of specifications set forth in the manufacturer's catalog? <input type="checkbox"/> NO (the item is not commercial grade) <input checked="" type="checkbox"/> YES (continue)			
<input checked="" type="checkbox"/> All three criteria have been satisfied. The Item meets the definition of commercial grade.			
Section 2d Reason for Dedication			
The above Commercial Grade (CG) described Item is being Dedicated for use in the application cited for the following reason(s):			
<input checked="" type="checkbox"/>	Item is being purchased from a non-ESL manufacturer supplier as CG to be used in a Safety Class application.		
<input type="checkbox"/>	Item is being purchased from a non-ESL manufacturer supplier as CG to be used in a Safety Significant application.		
<input type="checkbox"/>	Item was purchased from a non-ESL manufacturer supplier as CG to be used in a Safety Class application.		
<input type="checkbox"/>	Item was purchased from a non-ESL manufacturer supplier as CG to be used in a Safety Significant application.		
<input type="checkbox"/>	Other ('like-for-like', similar, substitution, replacement evaluation)		

Commercial Grade Item Upgrade Dedication Form

SNF-3876, Rev. 2

ECN No. N/A CGI No. CGI-SNF-D-07-P4-001
 Title: **Worcester Solenoid-Actuated Gas-Operated MCO Isolation Valves**

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Section 3 Failure Effects Evaluation

A. Part/Component Safety Function:

1. **Maintain an intact pressure boundary/confinement.**
2. **Isolate the MCO in the event of loss of vacuum to reduce air in-leakage or loss of He, prevent an H₂ explosion.**
3. **Maintain critical function before and after seismic event.**

B. Part/Component Functional Mode:

Safety Function #1: Active Passive

Active - Mechanical or Electrical change of state is required to occur for the component to perform its safety function

Safety Function #2: Active Passive

Passive - Change of state is not required for the component to perform its safety function

Safety Function #3: Active Passive

C. Host Component Safety Function (if applicable): **N/A**

1.

D. Failure Mode(s) and the effects on component or system safety function (see Worksheet 1):

1. **Structural or mechanical failure of these valves could cause loss of MCO isolation functions and resultant rapid bleed off of the Helium to the MCO, air in-leakage to the MCO, or inadvertent MCO water drainage.**
2. **Electrical fault in solenoid. Valve fails closed.**
3. **Loss of air pressure to actuator. Valve fails closed.**
4. **Loss of control signal to solenoid. Valve fails closed.**

Section 4 Environmental & Natural Phenomena Hazard Design

Environmental Qualification Required:

Yes

No **Environmental Condition B**

If yes: Environmental Qualification Requirements

Limiting Environmental Conditions:

Required Safety Functions:

Qualification Period:

Natural Phenomena Hazard (NPH) Design Required:

Yes

No

**HNF-PRO-97 Rev. 0
W-441-P4, Rev. 3**

If yes: NPH Design Requirements

Performance Category: **PC-3**

NPH Design Req'ts.: **Seismic Condition A**

Required Safety Functions: **Boundary/Confinement,
Isolation, Prevent H₂ Explosion**

Section 5 Component Functional Classification

Safety Class (SC)

General Service (GS)

Safety Significant (SS)

If part/component classification is different from host component/system, document basis. **N/A**

Sections 6 and 7 (Reserved)

Section 8 References (for Functional Classification)

National Codes/Standards: **ASME B31.3**

Safety Analysis Report (SAR): **HNF- 3553, Rev. 0a, Annex B**

Drawings: **H-1-82161, Rev. 4, HNF-SD-SNF-SEL-002, Rev. 7**

Vendor Manual/Manufacturer/Supplier Information: **Worcester Series 59 Full Port Ball Valve PB 451-22, PB 302-26, PB 303-1**

Commercial Grade Item Upgrade Dedication Form

SNF-3876, Rev. 2

ECN No. N/A CGI No. CGI-SNF-D-07-P4-001
 Title: **Worcester Solenoid-Actuated Gas-Operated MCO Isolation Valves**

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Section 9 Critical Characteristics				
Critical Characteristics	Acceptance Criteria/Tolerances	Acceptance Method	ID	Function
1. Item Identification Critical Characteristics (necessary for reasonable assurance that the Item delivered is the Item specified)				
Nameplate - Manufacturer	Worcester Controls	1, IN	X	
Valve-Component Number-Procurement and/or Model Number	1" E 5966RTBW4 (Per Procurement Package W-441-P4, Rev. 3, Section H, Design Data Sheet)	1, IN	X	
Actuator-Component Number-Procurement and/or Model Number (Includes SOV)	15I939SWM2120PBC (Per Procurement Package W-441-P4, Rev 2, Section H, Design Data Sheet)	1, IN	X	
Nameplate Data of Actuator (Includes SOV)	Per Vendor Manual. To Include "R6" (Upper Right Corner)	1, IN	X	
2. Physical Critical Characteristics (for reasonable assurance that the Item delivered is the Item specified)				
Valve Body Material	Stainless Steel (Note 4)	1, IN; 1, T	X	
Configuration/Mounting	Integral Actuator/Valve Assembly. Transverse Actuator Mounting. Black Recessed Override Button.	1, IN	X	
Process Connection	1" Butt Weld	1, IN	X	
3. Performance Critical Characteristics (for reasonable assurance that the Item will perform its intended safety function(s))				
GOV Pressure Boundary	Pressure Test At nominal 165 psig (Zero Leakage) Note 3	1, T		X
Internal Pressure	Withstands nominal 150 psig and 29" Hg Vacuum (Zero Leakage)	1, T		X
GOV Seat Leakage	Pressurize the upstream side of the valve seat to 165 psig (110%) and reduce to 150 psig (140%), <i>100% per 6/1/00</i> soaking for 10 min. at 150 psig, then check for obvious leaks. Apply bubble leak solution on the valve seat to find leaks. Proceed to lower the pressure to 15 psig for the Sensitive Leak Test. Apply solution to valve seat area after minimum 15 minutes soak time at nominal 15 psig. Acc. Criteria: No Leakage-No Bubbles. Note 5	1, T		X
GOV Fail Safe Position	Valve Fails Closed on Loss of Air Pressure or Electrical Power to the Solenoid. Stroke Time Less Than 2 Seconds	1, T		X
Environmental	Note 1			
Seismic Condition A	Note 2	1, T		X

Commercial Grade Item Upgrade Dedication Form

SNF-3876, Rev. 2

ECN No. N/A CGI No. CGI-SNF-D-07-P4-001
 Title: **Worcester Solenoid-Actuated Gas-Operated MCO Isolation Valves**

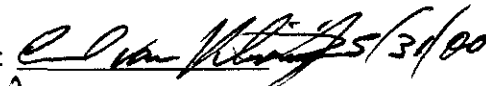
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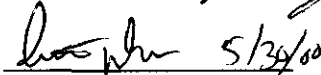
4. Notes and Legend:
1. These valves have coro-lube (nickel-acetate), acetal resin, and NEMA Enclosed Solenoids, these materials are not subject to degradation at 40°F and 60% RH or 115°F and 22% RH and are suitable for condition B Application.
 2. Maintain critical function before and after seismic event. W-441-P4, Rev. 3, Appendix L, pages L-2 & L-4, provide a seismic testing plan for these components at a (TBD) seismic spectra. Equipment that has been shaker-table tested should not be installed in a plant (Ref. IEEE Standard 344-1984, Section 7). Consequently, the seismic test constitutes a destructive test. The industry sampling practice for destructive test is to test only one item.
 3. Pressure test at 110% of design accident condition pressure of 150 psig.
 4. Material verification acceptance method may be by either inspection or test.
 5. 15 psig = 15 psig or 25% of 150 psig=37.5 whichever is less (ASME V, Article 10, T-1044 and B31.1-1993, 345.8(a))
- Rev. 2: Rev'd all pages – new forms; rev'd Internal Pressure Acc. Criteria to "Withstands nominal 150 psig and 29" Hg Vacuum", GOV Seat Leakage Acc. Criteria – rev'd all, GOV Fail Safe Position rev'd Stroke Time to "Less Than 2 Seconds", Deleted CC: Insulation Resistance, Solenoid Inrush Current, Solenoid Holding Current, and Current Carrying Capability Of Contacts

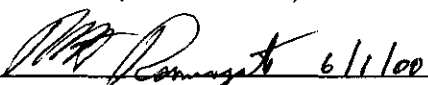
- Acceptance Method:
1. Special Test and Inspection
 - 1, IN for Inspection
 - 1, T for Test
 2. Commercial Grade Survey
 3. Source Verification
 4. Vendor/Item History

Section 10 Initial Review and Approval

Approvals:

Designated Engineer:  5/31/00

Design Authority:  5/31/00

QA Engineer:  6/1/00

Commercial Grade Item Upgrade Dedication Form

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 Title: **Worcester Solenoid-Actuated Gas-Operated MCO Isolation Valves**

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WORKSHEET 1 DETERMINATION OF FAILURE MECHANISMS

Section 1			
Typical Failure Mechanisms	Definition	X = Applicable to Component under Evaluation X?	Indicate Failure Mode
Fracture	Separation of a solid accompanied by little or no macroscopic plastic deformation.		
Corrosion	The gradual deterioration of a material due to chemical or electrochemical reactions, such as oxidation, between the material and its environment.		
Erosion	Destruction of materials by the abrasive action of moving fluids, usually accelerated by the presence of solid particles carried with the fluid.		
Open Circuit	An electrical circuit that is unintentionally broken so that there is no complete path for current flow.		
Short Circuit	An abnormal connection by which an electrical current is connected to ground, or to some conducting body, resulting in excessive current flow.		
Blockage	Clogging of a filtering medium resulting in the inability to perform its purification function or blockage of flow.		
Seizure	Binding of a normally moving item through excessive pressure, temperature, friction, jamming.	X	Structural Failure or Seizure of Valve/Disc
Unacceptable Vibration	Mechanical oscillations produced are beyond the defined permissible limits due to unbalancing, poor support, or rotation at critical speeds.		
Loss of Properties	A loss of mechanical and physical properties of a material due to exposure to high temperatures, radiation exposure.		
Excess Strain	Under the action of excessive external forces the material of the part has been deformed or distorted.		
Mechanical Creep	From prolonged exposure to high temperature and stress, the object will show a slow change in its physical (shape and dimension) and mechanical characteristics.		
Ductile Fracture	Fracture characterized by tearing of metal accompanied by appreciable gross plastic deformation.		
Section 2 Additional Failure Modes Applicable to the Component Under Evaluation			
1. Loss of Air Pressure			

Commercial Grade Item Upgrade Dedication Form

SNF-3876, Rev. 2

ECN No. N/A CGI No. CGI-SNF-D-07-P4-001
 Title **Worcester Solenoid-Actuated Gas-Operated MCO Isolation Valves**

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Checklist 1 - Acceptance Method 1 - Special Test/Inspection Verification

SECTION 1			
Item Description: 1" MCO Solenoid Isolation Valves		Equip #: GOV/SOV-1*05, 1*09	
System #: 7		Procurement and/ or Model #: 1" E 5966RTBW4 with 151939SWM2120PBC	
Manufacturer (Address/Phone): Worcester Controls P.O. Box 538 33 Lock Dr. Marborough, MA 01752 (508) 481-4800		Supplier (Address/Phone): Olympic Tool & Engineering W. 21 Sanderson Way Shelton, WA 98584 (360)426-5231	
SECTION 2 CRITICAL CHARACTERISTICS TO BE VERIFIED BY METHOD 1.			
Insp	Test	Post-Test	
X			1. Nameplate - Manufacturer
X			2. Component Number-Procurement and/or Model Number
X			3. Actuator-Component Number-Procurement and/or Model Number (Includes SOV)
X			4. Nameplate Data of Actuator (Includes SOV)
X	X		5. Body Material (Verification may be by either inspection or test)
X			6. Configuration/Mounting
X			7. Process Connection
	X		8. GOV Pressure Boundary
	X		9. Internal Pressure
	X		10. GOV Seat Leakage
	X		11. GOV Fail Safe Position
	X		12. Seismic Condition A
SECTION 3 BY INSPECTION * See Attachment H, Table H-1 of Desk instruction for Sampling Size; References (See Section 7)			
Characteristic: Nameplate - Manufacturer		Sample Size*: 100%	
Acceptance Criteria: Worcester Controls		Receipt Inspection Plan / Report #:	
Characteristic: Valve Component Number-Procurement and/or Model Number		Sample Size*: 100%	
Acceptance Criteria: 1" E 5966RTBW4 (Per Procurement Package W-441-P4, Rev. 3, Section H, Design Data Sheet)		Receipt Inspection Plan / Report #:	
Characteristic: Actuator-Component Number - Procurement Package W-441-P4, Rev. 3, Section H, Design Data Sheet (Includes SOV)		Sample Size*: 100%	
Acceptance Criteria: 151939SWM2120PBC		Receipt Inspection Plan / Report #:	
Characteristic: Nameplate Data of Actuator (Includes SOV)		Sample Size*: 100%	
Acceptance Criteria: Per Vendor Manual. To Include "R6" (Upper Right Corner).		Receipt Inspection Plan / Report #:	
Characteristic: Process Connection		Sample Size*: 100%	
Acceptance Criteria: 1" Buttweld		Receipt Inspection Plan / Report #:	
Characteristic: Configuration/Mounting		Sample Size*: 100%	
Acceptance Criteria: Integral Actuator/Valve Assembly. Transverse Actuator Mounting. Black Recessed Override Button.		Receipt Inspection Plan / Report #:	

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Characteristic: **Valve Body Material** Sample Size*: **100%**

Acceptance Criteria: **Stainless Steel**

Receipt Inspection Plan / Report #:

Section 4 By Special Test * See Attachment H, Table H-1 of Desk Instruction for Sampling Size References (See Section 7)

Characteristic for Test: **GOV Pressure Boundary**

Samp Size*: Normal[]Reduced[]Tightened

Acceptance Criteria: **Pressure Test at nominal 165 psig for >10 minutes; Reduce pressure to 100%, perform snoop test (No Leakage-No Bubbles)**

Actual Test Value:

Test Plan and Report #:

Characteristic for Test: **Internal Pressure**

Samp Size*: Normal[]Reduced[]Tightened

Acceptance Criteria: **Withstands nominal 150 psig and 29" Hg Vacuum (Zero Leakage)**

Actual Test Value:

Test Plan and Report #:

Characteristic for Test: **GOV Seat Leakage**

Samp Size*: Normal[]Reduced[]Tightened

Acceptance Criteria: **Pressurize the upstream side of the valve seat to 165 psig (110%) and reduce to 150 psig (110%), soaking for 10 min. at 150 psig, then check for obvious leaks. Apply bubble leak solution on the valve seat to find leaks. Proceed to lower the pressure to 15 psig for the Sensitive Leak Test. Apply solution to valve seat area after minimum 15 minutes soak time at nominal 15 psig. Acc. Criteria: No Leakage-No Bubbles.**

Actual Test Value:

Test Plan and Report #:

Characteristic for Test: **GOV Fail Safe Position**

Samp Size*: Normal[]Reduced[]Tightened

Acceptance Criteria: **Valve Fails Closed on Loss of Air Pressure or Electrical Power to the Solenoid. Stroke Time <2 Sec.**

Actual Test Value:

Test Plan and Report #:

Characteristic for Test: **Seismic Condition A**

Samp Size*: **Destructively Test Only One Item**

Acceptance Criteria: **Maintain Critical Function Before and After Seismic Event**

Actual Test Value:

Test Plan and Report #:

**If Supplier/Manufacturer or Other, Refer to CGI Checklist-2 for Support Information

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Section 5: Test / Inspection Summary (Acceptance Method 1)

1. SUMMARY OF VERIFIED CRITICAL CHARACTERISTICS, THEIR VERIFICATION METHODS, AND RESULTS

ITEM DESCRIPTION: Gas Operated Full Port Ball Valves

Critical Characteristics		Verification Results									
Critical Characteristics	Acceptance Criteria/Tolerances	ID	Function	Method T/IN	Procedure or RR#	Check-List ID	Number Tested	Number Failed	Verifying Organization	Printed Name Signature	Date
Manufacturer	Worcester Controls	X		1, IN							
Valve Component No.- Proc. and/or Model No.	1" E 5966RTBW4, (Per Procurement Package W-441-P4, Rev. 3, Section H, Design Data Sheet)	X		1, IN							
Actuator P/N-Comp. No.-Proc. and/or Model No. (Includes SOV)	151939SWM2120PBC, (Per Procurement Package W-441-P4, Rev. 3, Section H, Design Data Sheet)	X		1, IN							
Nameplate Data of Actuator (Includes SOV)	Per Vendor Manual. to Include "R6" (Upper Right Corner).	X		1, IN							
Body Material	Stainless Steel	X		1, IN							
Configuration/ Mounting	Integral Actuator/Valve Assembly. Transverse Actuator Mounting. Black Recessed Override Button.	X		1, IN							
Process Connection	1" Butt weld	X		1, IN							

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 Title: Worcester Solenoid-Actuated Gas-Operated MCO Isolation Valves

ITEM DESCRIPTION: Gas Operated Full Port Ball Valves - Continued

Critical Characteristics		Verification Results									
Critical Characteristics	Acceptance Criteria/Tolerances	ID	Function	Method T/N	Procedure or RR#	Check-List ID	Number Tested	Number Failed	Verifying Organization	Printed Name Signature	Date
GOV Pressure Boundary	Pressure Test At nominal 165 psig (Zero Leakage)		X	1, T							
Internal Pressure	Withstands nominal 150 psig and 29" Hg Vacuum (Zero Leakage)		X	1, T							
GOV Seat Leakage	Pressurize the upstream side of the valve seat to 165 psig (110%) and reduce to 150 psig (110%), soaking for 10 min. at 150 psig, then check for obvious leaks. Apply bubble leak solution on the valve seat to find leaks. Proceed to lower the pressure to 15 psig for the Sensitive Leak Test. Apply solution to valve seat area after minimum 15 minutes soak time at nominal 15 psig. Acc. Criteria: No Leakage-No Bubbles.		X	1, T							
GOV Fail Safe Position	Valve Fails Closed on Loss of Air Pressure or Electrical Power to the Solenoid. Stroke Time <2 Second		X	1, T							
Seismic Condition A	Maintain Critical Function Before and After Seismic Event.		X	1, T							

2. DISPOSITION OF UNVERIFIED OR FAILED CRITICAL CHARACTERISTICS

Critical Characteristic	Disposition

3. Signature Indicates All Critical Characteristics Verified Satisfactory or Acceptably Dispositioned And Commercial Grade Dedication is Satisfactory and Complete.

Testing Agency Approval: _____ Date _____
 Testing Agency QA Engineer: _____ Date _____
 Design Authority: _____ Date _____
 QA Engineer: _____ Date _____

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Section 6 Contacts / Phone Numbers

Title	Name	Phone
Design Authority		
QA		
QC		
Cog - Engineer		
CGI Engineer	Larry Price	372-8770
Procurement Engineer		
Other		

Section 7 Supporting Documentation for This Checklist

Initial Procurement Documents		For Critical Characteristics
<input type="checkbox"/>	Drawings:	
<input type="checkbox"/>	Manuals (specify type & number):	
<input type="checkbox"/>	Design Calculations	
<input type="checkbox"/>	Installation Instructions	
<input type="checkbox"/>	Operation Instructions	
<input type="checkbox"/>	Calibration Instructions	
<input type="checkbox"/>	Manufacturer's Recommended Spare Parts List	
<input checked="" type="checkbox"/>	Other: Vendor Specifications: Worcester Series 59 Full Port Ball Valve PB 451-22, PB 302-26, PB 303-1	All
Procurement Documents		
<input type="checkbox"/>	Certificate of Conformance/Compliance	
<input type="checkbox"/>	Seismic Qualification Certificate	
<input type="checkbox"/>	Environmental Qualification Certificate	
<input type="checkbox"/>	Test Report (s):	
<input type="checkbox"/>	Inspection Report (s):	
<input type="checkbox"/>	CMTRs for ASME Pressure Retaining Materials	
<input type="checkbox"/>	Valve Seat Leakage Report	
<input type="checkbox"/>	Weld Records	
<input type="checkbox"/>	Material Traceability Record	
<input type="checkbox"/>	Other:	